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ABSTRACT

The goal of this project is to find effective ways to stimulate parent involvement in science and mathematics education and to spearhead a nationwide initiative putting these models to use. Parent focus groups were used to field test parent involvement strategies that had been identified in the initial research, and to gather feedback from parents on the effectiveness of these strategies. This report summarizes the findings of focus groups in seven cities across the United States (Baltimore, Maryland; Birmingham, Alabama; Chicago, Illinois; Houston, Texas; Los Angeles, California; and Seattle, Washington) and the Mississippi Delta Region. It includes the key findings of the literature review on parent involvement, and key recommendations for involving parents in science education such as inform parents of the importance of science and mathematics; and introduce parents to science activities they can do at home with their children. One conclusion from the focus groups is that most parents can and want to become more involved in their children's education. Parents are interested in hands-on and ready-to-do science with their children at home. Results indicate that schools can become more welcoming by lowering cultural barriers, initiating parent involvement, and developing and maintaining communication with parents. Contains 68 references. (DDR)

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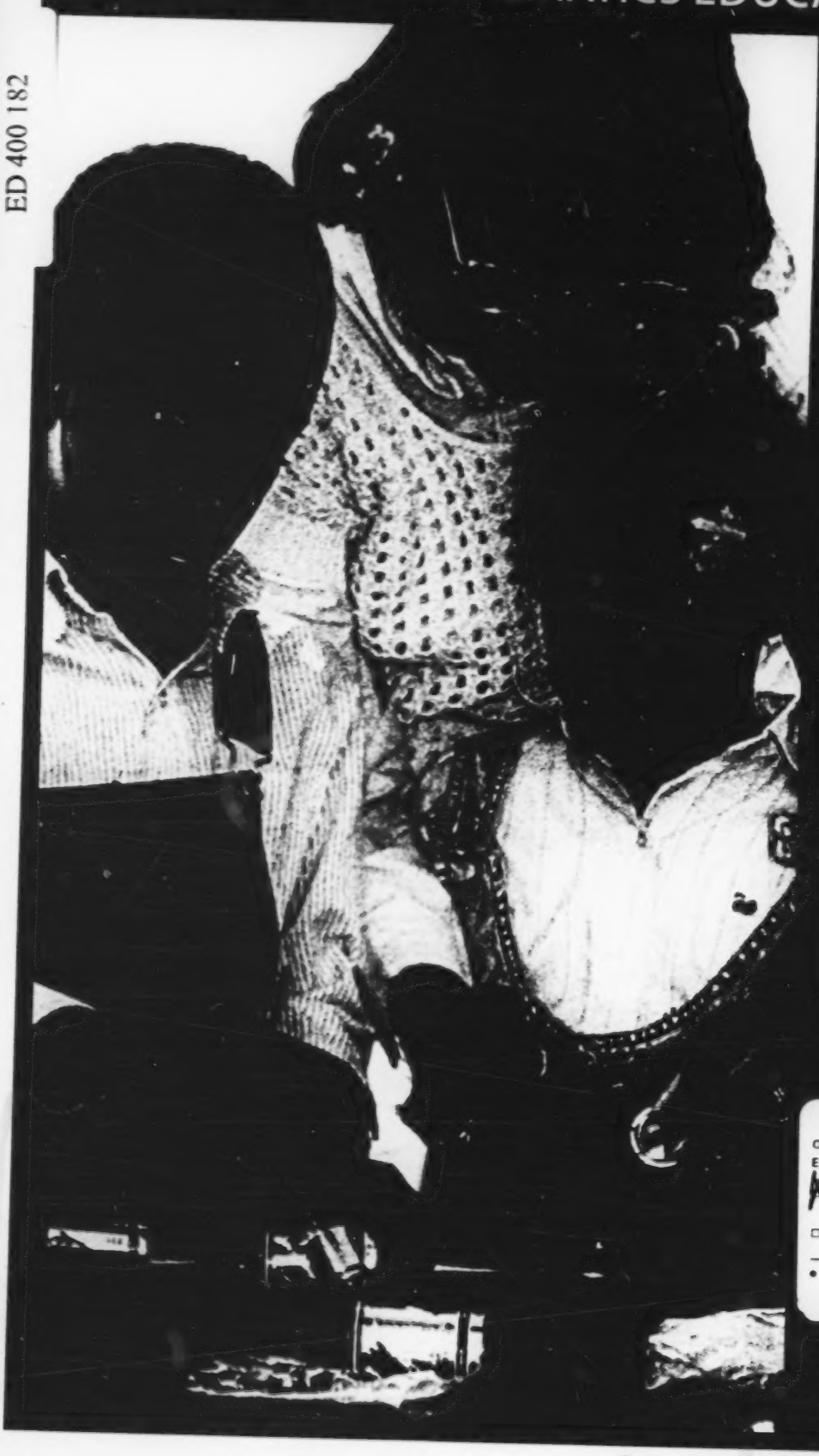

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Science and Mathematics Reform: What Do Parents Need to Know to Get Involved?

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Any interpretations and conclusions in this publication are those of the authors and do not necessarily reflect the views of the National Science Foundation, the DeWitt Wallace-Reader's Digest Fund, the American Association for the Advancement of Science, or any of the programs listed above.

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4

Introduction

As the development of national curriculum reforms in science and mathematics proceeds, parents must become an active part of the process. While major science education reform efforts have given parents little attention, a number of national and community organizations have developed materials to help parents support the education of their children. The *Count on Me* project, conducted by KCET-TV, Los Angeles, in partnership with AAAS, was a nationwide effort to involve parents in the mathematics education of their children. Similarly, AAAS' *Proyecto Futuro* was a comprehensive, bilingual middle school curriculum which featured workshops that addressed Hispanic parents' science and mathematics fears by engaging them in "fun" hands-on science and math activities.

This interaction with parents has shown us that, while parents must become an active part of the science and mathematics reform process, the information they want and need, and the form it should take, still remains to be defined. Parents must have more input into the form and content of materials and programs targeted to them if these efforts are to be successful.

This report summarizes the findings of a series of focus group discussions conducted in seven sites across the country by the AAAS Directorate for Education and Human Resources Programs, as part of a planning grant awarded by the National Science Foundation to develop strategies for increasing parent involvement in science education.

In the literature, we discovered a number of findings that point to the importance of parental involvement in education. As Kelleghan et al., (1993) state, "The home environment is a most powerful factor in determining level of school achievement, interest in school learning, and the number of years of schooling." The U.S. Department of Education's *Strong Families, Strong Schools* (1994) Report cites three factors—student absenteeism, variety of reading materials in the home, and excessive television watching—that explain nearly 90 percent of the differences in mathematics achievement scores. The key findings of our research review, presented in Figure 1, fully support these conclusions. (The full review and references are provided in the appendix.)

There is little research, however, on parents' views of science education, science curriculum, how they would like to get involved, and what resources they believe they need to become effectively involved. To address this gap in the research, we conducted focus group discussions with parents representing a broad sample of demographic groups. Summaries of these findings, along with a review of the literature, are presented here as a guide to setting a program and research agenda in this critical but underexamined area of science and mathematics education.

Figure 1 Key Findings from Review of Reference Literature on Parent Involvement

How Home and Parents Influence Academic Achievement

1. Home learning resources, such as books and microscopes, have a positive impact on academic achievement. Too much television viewing has a negative impact.
2. High achieving children spend a lot of time out of school in constructive learning activities, especially when encouraged by their parents.
3. Children whose parents set high standards show higher levels of academic achievement.
4. Children whose parent are directly involved in their school instruction, such as homework, perform at higher levels than children whose parents aren't involved.

Barriers to Parent Involvement

1. Parents, especially parents employed outside the home, say they do not have enough time to spend with their children.
2. Many parents feel ill-informed about how and why academic decisions are made about their children.
3. Many parents feel that their interests receive little consideration by educators.
4. Although most parents have positive attitudes about their children's schools, many parents feel disconnected from the schools.
5. Teachers receive little training in how to effectively involve parents.
6. Parents, especially those from minority ethnic/racial groups or those who do not speak English as their native language, feel discouraged from getting involved in the schools, which represent the dominant and unfamiliar culture.
7. Parent involvement drops dramatically as children grow older.

Steps to Encourage Parent Involvement

1. Schools can lower communication barriers and make it easier for parents to become involved.
2. Train teachers in techniques for encouraging and supporting parent involvement.
3. Inform parents on academic standards, curriculum, instruction, and assessment.
4. Provide parents with training on how to work with their children and help them understand their significance in the educational process.
5. Build trust between parents, teachers, and the school system through positive initiatives from the school and maintenance of regular communication.
6. Encourage parent involvement from the start and continue throughout schooling.
7. Encourage family learning in relation to the school curriculum and in out-of-school contexts, such as viewing educational television, visits to museums, and participation in informal learning activities.

Methodology for Focus Group Research

Discussion Questions and Probes

The goals of the focus group research were to:

- assess parental attitudes towards science and science education,
- find out how parents are currently involved in their children's science education, and
- identify what knowledge and resources parents think they need to become more involved.

Each focus group session lasted approximately 60 minutes.

Focus Group Sites

Seven sites across the country were selected to obtain a broad sampling of parents from different ethnic/cultural groups, income levels, and regions. All but one of the sites were urban. One rural site was selected to compare the views of rural, low-income parents with their urban counterparts. Focus group participants were from all income levels, but low-income and minority parents were disproportionately represented. We did this intentionally, because the highest priority target audiences for parent involvement initiatives we are planning are low-income and minority parents, who have traditionally shown lower levels of parent involvement than other parents.

The focus group sites and the numbers of focus group discussions held at each site are as follows:

- Baltimore (2 focus groups; 22 participants)
- Houston (3 focus groups; 39 participants)
- Birmingham (2 focus groups; 28 participants)
- Mississippi Delta (3 focus groups; 50 participants)
- Chicago (2 focus groups; 27 participants)
- Los Angeles (3 focus groups; 33 participants)
- Seattle (2 focus groups; 21 participants)

There were 220 parent participants (96 male, 124 female), including 112 African-Americans, 71 Hispanics, 27 whites, and 10 Asians and other. All were adults who currently had a significant relationship with an elementary school-age child. Most were parents, but there were also older siblings, grandparents, and other close family friends or relatives.

Focus Group Data Recording and Analysis

Focus group sessions were tape-recorded. Notes were also taken during the discussion. Key themes and issues were identified from the focus groups at each site. These themes and issues formed the basis for our overall focus group results and analysis.

Findings from Focus Group Research

Our review of the research literature concerning parent involvement in education and our discussion with over two hundred parents showed us that most of the parents are deeply interested in their children's education. Many of these parents, however, do not know how to get involved in the schools or what they can do at home to support their children's learning and academic achievement.

Our focus group research suggests some issues specific to science education which are not evident in the general parent involvement literature.

Parental Views of Science

- Parents believe science is important, but parents don't know which science their children should study or why the study of science is important for many careers. Parents did not seem to make a connection between science instruction and careers. They were anxious to have information, but did not know where to get it.
- In general, parents recognize the importance of mathematics and technology in everyday life and careers (e.g., they balance checkbooks, use ATMs), but many do not seem to recognize the importance of science literacy except in recognizing the strong connection between science and careers in health.
- Parents know that mathematics is important for academic success, but often do not know what specific mathematics or science courses are the most important for future academic plans or careers.

Knowledge of Elementary School Science and Mathematics Curriculum and Pedagogy

- Most parents were not aware of national, state or local goals in science education. They felt the schools could do a better job of communication with them and suggested using newsletters and/or meetings to accomplish this.
- Parents have different views of science and mathematics instruction. Parents seem less familiar with but more comfortable with science instruction than with mathematics instruction. Parents recognize that mathematics is no longer taught in ways that they are familiar with or that they recognize from their own classroom experience. This makes some parents feel uncomfortable with changes in the mathematics curriculum. Since most parents had little science instruction in their own elementary school backgrounds, they cannot draw similar comparisons to instruction methods used in science classes and they are more open to the current educational approaches.
- In general, parents were largely unaware of what science (or if any science) was being taught to their children at the elementary level. This was the result, in part, of the fact that the parents reported that their children frequently bring home mathematics homework, but rarely or never bring home science homework.
- Many parents believe computation is very important in mathematics instruction, but may not have specific opinions about science instruction.
- Parents seem more open to alternative methods of teaching science. Many parents believe that hands-on science is the most effective approach to science instruction, and said they would enjoy doing such activities with their children at home.

Parental Involvement

- Parents aren't anxious about doing science. Parents are interested in "hands-on" science and ready to "do science" with their children at home. But they would like to know more about what to do. Many parents indicated that they would be willing to participate in hands-on science workshops held in schools or community settings.
- In general, parents did not think they had enough information about their child's school science program to become more involved at home or at school.
- Many parents feel uncomfortable in working with their children on mathematics, but do not seem to have the same levels of anxiety concerning science.
- Many parents, especially those from racial and ethnic groups, feel alienated from schools. Many parents do not feel welcome in their children's schools. Some feel a lack of comfort with established "cliques" of parents at school. Hispanic and language-minority parents are discouraged from contact with teachers because they are not fluent in English. Other minority parents felt subtly discouraged from participating. Finally, parents are simply not invited to participate in many schools.
- Parents recognize the importance of informal education. Parents believe outside activities, such as going to museums, participating in youth clubs, and watching educational television, are important in developing interest in science.
- Parents believe the most effective way to involve them is through their children. Parents stressed that they find it hard to deny requests by their children for participation in school or other educational activities.
- Many parents are not involved because of their lack of time.
- Parental attitudes towards their school systems varied dramatically across sites. In two sites, parents expressed decidedly negative views of the school systems and were not optimistic about the prospects of significant change within the systems.

Figure 2 Key Recommendations for Involving Parents in Science Education

Parental Views of Science

1. Introduce parents and their children to examples and role models of persons involved in science-related careers at all levels. Hold parent-child career fairs at schools or in community settings to introduce science-related careers. Take parents on tours of science-related businesses.
2. Inform parents of the importance of science and mathematics education by providing examples of areas parents are familiar with, such as issues in health and the environment.

Knowledge of Elementary School Science & Mathematics Curriculum & Pedagogy

1. Inform parents of national science education goals, standards, curriculum, assessment, and pedagogy (i.e., what is taught and how).
2. Inform parents on what specific science and mathematics courses students need to take at the middle- and high-school levels to pursue science-related majors (e.g., computer science, medicine, engineering) as undergraduates and beyond.
3. Provide parents with concrete introductions in classroom settings to the academic goals, textbooks or other curriculum materials, and hands-on activities used for science education in their child's school.
4. Provide parents who are not native English speakers with an introduction to the school system and science curriculum in their own language and a support system, using volunteer parents in the school who speak their language, or bilingual or English as a Second Language staff.

Parental Involvement

1. Involve parents and children together in science activities in comfortable settings, such as science museums, community centers, or libraries. Provide science centers and community organizations with mini-grants to support expansion of family science activities.
2. Highlight informal science opportunities, such as current science television or programming for children or science center activities, through the school newsletter or other accessible means.
3. Introduce parents to science activities they can do at home with their children.
4. Use children as advocates to recruit parent involvement by having children invite parents to family science activities at school or in other settings.
5. Provide family science materials, such as viewers' guides, lists of library books, or take-home activity sheets, to participants in family science events.

Summary

Our overall conclusion from the focus groups is that most parents can and want to become more involved in their children's education. Parents are interested in "hands-on" science and ready to "do science" with their children at home. Schools can become more "welcoming" by lowering cultural barriers, taking the initiative in inviting parent involvement, and in developing and maintaining regular communication with parents. Informal learning institutions, such as museums and zoos, community organizations, and the media, can do much to encourage and support parent involvement in education.

Review of the parent involvement research and our focus group studies has shown that there are a number of strategies that can be effectively used both in and out of school to encourage and support family learning in science.

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Appendix

The Role of Parents in Science Education: An Analysis of Research Findings

Literally hundreds of programs and studies concerning parent involvement in education have been conducted during the past three decades. An overwhelming conclusion is that involvement by parents in their children's education is critical and contributes significantly to their academic achievement.

The U.S. Department of Education's *Strong Families, Strong Schools* (1994) Report cites three factors under the direct control of parents — student absenteeism, variety of reading materials in the home, and excessive television watching — that explain nearly 90 percent of the differences in mathematics achievement scores. As Kelleghan et al. (1993) state, "The home environment is a most powerful factor in determining level of school achievement, interest in school learning, and the number of years of schooling." Parent involvement can also improve the quality of schools (Gordon, 1979; McDill, 1969). In a review of a number of studies, Leler (1987) found that "The fuller the participation of parents, the more effective the results obtained."

Despite some evidence of improved science achievement test scores in recent years, substantial gaps in science achievement at all grade levels remain when African-American and Hispanic students are compared with white American students. Students who succeed in the required "gateway" courses in mathematics and science go to college more often and earn substantially more money in their later careers. For social justice, as well as economic competitiveness, science education remains an issue which should be of primary concern to parents of children from all backgrounds.

The purposes of this analysis are to: (1) identify major trends from this wealth of research which describe how parent involvement influences academic achievement and what factors motivate or discourage parents from becoming involved, (2) describe barriers to parent involvement, and (3) describe environments which encourage parent involvement.

How Home and Parents Influence Academic Achievement

Family involvement in education is fundamental to strong schools and higher levels of academic achievement. In general, active parents are more active on all fronts: more involved in school, more involved with their children's school work, more supportive of learning outside school, and more likely to have higher expectations for educational achievement (Zill & Nord, 1994). Early intervention programs which encourage parent involvement show positive impacts on students that persist to high school graduation (Gotts, 1989; Lazar et al., 1978; Schwekart et al., 1992).

Parent involvement not only improves the academic achievement of children; it also enhances self-esteem, improves school attendance rates, and school behavior (Settles, 1985). Parents from all backgrounds and all income levels can have a positive impact on their children's academic achievement (Stevenson & Baker, 1987; Henderson & Berla, 1994). Parents who are involved also feel more confident about their children's schooling (Collins et al., 1982).

Parents influence their children's academic achievement in several important ways:

1. Home learning environment. The learning resources available at home and the amount of television children watch directly influence academic achievement. Children in homes with more books, computers, and other learning resources (microscopes, globes, etc.) consistently show higher levels of academic achievement in reading, mathematics, and science (Lockheed and Gorman, 1987; U.S. Department of Education, 1992).

Many American children watch hours of television daily. Although most parents (73%) want to limit how much television their children watch, parents who work cannot so easily control viewing (Finney, 1993). Over two-fifths (44%) of seventh graders watch three or more hours of television each day (Puma et al., 1993). Students who spend a significant part of their free time watching television show lower levels of academic achievement (Puma et al., 1993).

Family environments with regular routines, such as eating dinner together and a set time for doing homework, are associated with higher levels of academic achievement (Benson et al., 1980; Clark, 1990; U.S. Department of Education, 1987).

2. Home learning-related activities. A well-established finding is that children whose parents read to them, whose homes are filled with books, and who are encouraged to pursue their interests in science, music, or other subjects, perform at higher levels academically than their peers (Benson et al., 1980; Bloom, 1985; Caplan et al., 1992; Reynolds et al., 1993). In one study (Clark, 1990), high-achieving students from all backgrounds spent about 20 hours a week engaged in "constructive learning activity," often strongly supported by their parents. Parents can have a positive impact on their high-school students' achievement by monitoring how their children are doing in school and by discussing plans for education after high school (Fehrmann et al., 1987).

In a review of a large number of empirical studies, Wahlberg (1984) found several factors in home learning contribute to academic achievement: informed parent-child discussions about everyday events, encouragement and discussion of leisure reading, monitoring of television viewing, deferral of immediate gratification, and parental interest in child academic and personal growth. He concluded that the home learning environment and activities were much more important determinants of academic success than socioeconomic status. Barton and Coley (1992) attribute most state-by-state differences in school achievement to differences between states in home learning — how much parents encourage their children to attend school regularly, how much they limit TV viewing, and how much they encourage their children to read.

3. Parental aspirations and standards. Parents who do more homework with their children and generally spend more time with their children on learning activities also set higher standards for their children (Clark, 1993), resulting in higher school achievement. This is true for lower and higher income children. Thus, socio-economic status may not be the critical variable; "press for academic success" (knowledge of and involvement in school work) is. Stevenson and Baker (1987) concluded that parent involvement has a positive impact, regardless of the educational background of the parents. However, higher educational attainment by parents is associated with higher expectations for the educational attainment of their children (Zill & Nord, 1994).

4. Homework. Students whose parents are directly involved in their school instruction, such as homework, perform better than students who only receive instruction from school. When parents talk to their children frequently about their schoolwork and work directly with their students on homework, their children perform at higher academic levels (Keith & Keith, 1993; Clark, 1993). This is critically important, since parents are reported most often by students as the persons who advise them to take science classes or on other academic matters. (Leitman, Binns, & Uni, 1995).

Barriers to Parent Involvement

Low-income or minority parents show lower levels of parent involvement than middle-class parents (U.S. Department of Education, 1990a). However, in one large-scale study, when family socio-economic status and parent educational attainment were controlled, parent involvement was the only factor that was significant in determining post-secondary educational enrollment among their children (Eagle, 1989).

There are a number of factors that discourage parent involvement, especially among low-income and minority parents:

1. Time. Over two-thirds of employed parents with children under 18 say they do not have enough time to spend with their children (Zill & Nord, 1994). With the ever increasing number of families with both parents working and of single-parent homes, these parents may feel increasingly pressed for time and resources, such as transportation (Milne, 1989). These factors are even more significant for lower-income families, with a greater proportion of single-parent homes and a lesser ability to pay for child care. Parent involvement was found to be lowest for single-parent and low-income families, where the parent was looking for work or unemployed (Zill & Nord, 1994).

2. Lack of information. Many parents feel ill-informed about why academic decisions are made about their children (Epstein, 1987; Leitman, Binns, & Uni, 1995). Parents, especially minority parents, often do not understand the barriers their children face in schools (Leitman, Binns, & Uni, 1995). New curriculum may challenge parents of all backgrounds, when they are not familiar with the new vocabulary used in language arts, mathematics, social studies, or science (Epstein, 1991). Young parents, primarily young mothers, who have not yet finished high school, may feel severely challenged when faced with the prospect of working with teachers concerning their children's education.

3. Feelings of unimportance. Many parents feel that their interests receive little consideration by educators, even though many teachers would like more parents to become engaged in their children's education (Peter B. Hart Research Associates, 1994; Elam et al., 1994).

4. Alienation from schools. Although most parents have positive attitudes towards the schools their children attend, many parents feel disconnected from the schools (Elam et al., 1994). Schools may not convey a "welcoming" feeling. For example, only one-third of the school districts in the Milwaukee area had an explicit parent involvement strategy (Phillips et al., 1985). As the Carnegie Corporation (1989) stated in a recent report, "Particularly in low-income and ethnic-minority neighborhoods, parents often are considered part of the problem of educating young adolescents rather than an important educational resource."

Differences between school personnel and parents in styles and types of social participation may further alienate some parents and discourage their participation (Winters, 1993). This may be especially true among lower-income and minority families, where racial, class, ethnic/cultural, and language barriers between teachers and parents may be more prevalent. As their children advance in age, lower-income and minority parents may become increasingly reluctant to contact their children's teachers. In a study of 135 elementary schools in a midwestern city, Wagenaar (1977) found that "open" schools which provide an encouraging and supportive environment for parent involvement resulted in higher levels of involvement and in higher student achievement than in "closed" schools.

5. Cultural and language barriers. Many Hispanic parents aren't effectively involved in their children's education. Poor Hispanic families, which often include adults who are not comfortable speaking English, often have no interactions with the school. Indeed, they may view the U.S. school system "a bureaucracy governed by educated non-Hispanics whom they have no right to question" (Nicolau & Ramos, 1990). Non-Hispanic teachers and administrators may interpret the reserve, non-confrontational manners, and non-involvement of some Hispanic parents as indications that these parents don't care (Inger, 1992). Many schools unconsciously erect barriers to Hispanic parents, by adopting a paternalistic attitude towards them, by sending out materials in English only, or by having staff who, through no fault of their own, receive little training or guidance in how to reach out to Hispanic parents (Inger, 1992). There are also a host of cultural differences regarding how parents "press" their children academically (Stevenson, 1993).

6. Age level. One stark and consistent finding is that parent involvement drops rapidly as children grow older. Even as parent involvement decreases, the proportion of negative contacts parents have with schools increases as their children grow older (Puma et al., 1993). A longitudinal study of the literacy skills of children, (Snow et al., 1991) followed low-income children from elementary school into secondary school and attributed their "precipitous drop" in school achievement to the sharp decline of parent involvement once their children were in secondary school.

Steps to Encourage Parent Involvement

1. Lower communication barriers. Parents are more involved in schools that make strong efforts to involve parents with reading and homework at school and at home (Dauber & Epstein, 1993). Some families may not become involved unless they are asked. Families who receive constant and consistent information about their children's progress have higher achieving children (Henderson & Berla, 1994; Comer, 1988). Most parents would become even more involved in their children's homework, if they got more feedback from their children's teachers (Epstein, 1986, 1987). Two-way communication between parents and schools, mûtual support, and joint decisions have been important elements in effective parent involvement programs (Swap, 1993).

A variety of methods, from electronic bulletin boards to answering machines to simple notes have been used as effective means for fostering communication between parents and teachers.

2. Evaluate parents' needs. Few states require teacher preparation programs to provide prospective teachers with coursework and experience involving working with families (Radcliffe et al., 1994). Teachers may want parents to become more involved, but they may also feel threatened when they believe parents are critical of their performance. They may also feel bewildered when trying to work with the parents of at-risk children. The quantity and quality of parent involvement can be increased when teachers receive training on how to assess the needs of parents and learn techniques for working with parents (Simich-Dudgeon, 1993; U.S. Department of Education, 1994).

3. Provide parents with training and help them understand their significance in the educational process. When school personnel strengthen parental understanding of their important roles in the education of their children, parents not only feel more positive about their role, but become more constructively involved in education at home and in school (Becher, 1984; Cochran & Henderson, 1986). Parent training in tutoring and in other ways has been found to have a significant impact on student learning (Cotton & Savard, 1982; Settles, 1985).

4. Build trust and maintain regular contact. When schools make parents feel comfortable at school and provide them with strategies for improving learning at home, parents get more involved and students are more highly mouivated (Baker & Stevenson, 1986; Epstein, 1991). The efforts schools make in getting parents involved is a stronger determinant of parent involvement than family background (Dauber & Epstein, 1993). High levels of contact between parents and teachers is associated with higher school achievement (Armor et al., 1976). A review of research found higher levels of student achievement were associated with a variety of regular parent/school contacts, such as parents serving as volunteers, phone contacts, home visits, home tutoring, and parent-teacher conferences (Tangri & Moles, 1987).

5. Encourage parent involvement from the start and continue throughout schooling. Parent involvement in preschool has been demonstrated to have long-term impacts (Bronfenbrenner, 1974), but it can also significantly support academic achievement at all grade levels, including higher grade levels (Dornbusch & Ritter, 1988; Epstein, 1991; Fehrmann et al., 1987; Henderson & Berla, 1994; Keith & Keith, 1993; Scott-Jones, 1984; Stevenson & Baker, 1987). In a recent report on young adolescents, the Carnegie Corporation (1995) strongly encouraged continued parent involvement in education. The report suggested that parent education, informing parents about students' progress, involving parents as volunteers, including parents in school governance, building links between families, schools, and community organizations, and family resources centers can help encourage family involvement.

6. Help parents become better informed on the academic choices facing their children. Although proportionally fewer African-American and Hispanic students enroll in science and mathematics courses, those that take algebra and geometry in high school enroll in college as often as white students (Pelavin Associates, 1993).

7. Encourage family learning. Parents involved in Family Science and Family Math programs increased their home learning activities and their children reported more interest in their science classes (Fruchter et al., 1992).

8. Encourage parents and children to use community and informal learning resources. Many children, especially those from low-income families, lack safe and accessible settings for recreation and learning after school (Carnegie Corporation, 1992). Museums, community organizations, youth groups, and after-school programs not only provide positive environments where children and youth can spend their free time; these environments can also help children develop their lifelong interest and encourage the development of skills (U.S. Department of Education, 1990b). Educational television and radio programming are also important informal science resources which families can be encouraged to use.

Summary

Our review of the research literature concerning parent involvement in education shows that most parents are deeply interested in their children's education. (The key findings of this paper are summarized in Figure 1). Many parents, however, do not know how to get involved in the schools or what they can do at home to support their children's learning and academic achievement.

Many parents, especially those from racial and ethnic minority groups, feel alienated from schools. Schools can become more "welcoming," by lowering cultural barriers, taking the initiative in inviting parent involvement, and in developing and maintaining regular communication with parents. An important part of this relationship is in informing parents about the academic standards, curriculum, and pedagogy of their children's schools. Schools, informal learning institutions, such as museums and zoos, community organizations, and the media, can also do much to encourage and support parent involvement in education.

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